

Numerical Overcurrent Protection

MIT 103/104/ 113/114

Description

The MIT overcurrent combine the power and flexibility of microcontroller technology with decades of experience in the field of protection.

MIT has three pole version with two phase & one earth element and four pole version with 3 phase and one earth element. MIT is housed in a compact 2/3V drawout vedette case.

Settings can be done by a readable Human Machine Interface which also serves for fault indication.

Variants

MIT 103-2 O/C + 1E/F without Highset

MIT 104-3 O/C + 1E/F without Highset

MIT 113-2 O/C + 1E/F with Highset

MIT 114-3 O/C + 1E/F with Highset

Design

The MIT 103/104/113/114 Protection unit consists of the following modules within it's compact dimensions.

- Input Module
- Power Supply and Output Relay module
- Measuring Module
- Front Fascia

The three modules viz. Input, Power supply and Measuring modules are plugged into the Front fascia which houses switches, LEDs and LED display for the human machine interface. All PCBs are well protected from one another and from external environment with best shielding for better electromagnetic compatibility and housed in the enclosed chassis, which is with drawout case is provided with the required CT shorting contacts. The relay has 3 or 4 input current transformers. The output from the current transformer is transformed to an equivalent voltage and sampled at the rate of 16 samples per cycle and digitized by means of analog to digital converter.

The digitized signals are processed numerically by means of microcontroller to effectively remove the DC components and to drive the Root Mean Square (RMS) value of the input signal. Based on this and the settings, decisions are taken to either elapse the time for inverse characteristics or definite time to operate the trip output relay. Where highset is included (which can be set OFF) an instantaneous tripping is effected once the current exceeds the set value.

Applications

- Distribution feeders
- Transmission lines
- AC machines
- Capacitor banks
- Transformers

Features

Protection

- Phase and ground overcurrent with/without highset (50P, N/51P, N)
- Numerical, true RMS measurement
- 6 characteristics



Numerical Overcurrent Protection Relay – MIT 114



EASUN REYROLLE

Control

- The basic relay has output relay with 2 N/O and 1 N/C contacts as standard
- | | |
|----------------------|-------|
| Trip | 1 N/O |
| Alarm | 1 N/O |
| Protection unhealthy | 1 N/C |
- Additional 5 output contacts can be given as follows:
- | | |
|---------------------|-------|
| Starter | 1 C/O |
| IDMTL Phase fault | 1 N/O |
| IDMTL Earth fault | 1 N/O |
| Highset Phase fault | 1 N/O |
| Highset Earth fault | 1 N/O |

Monitoring

- Self-monitoring facility

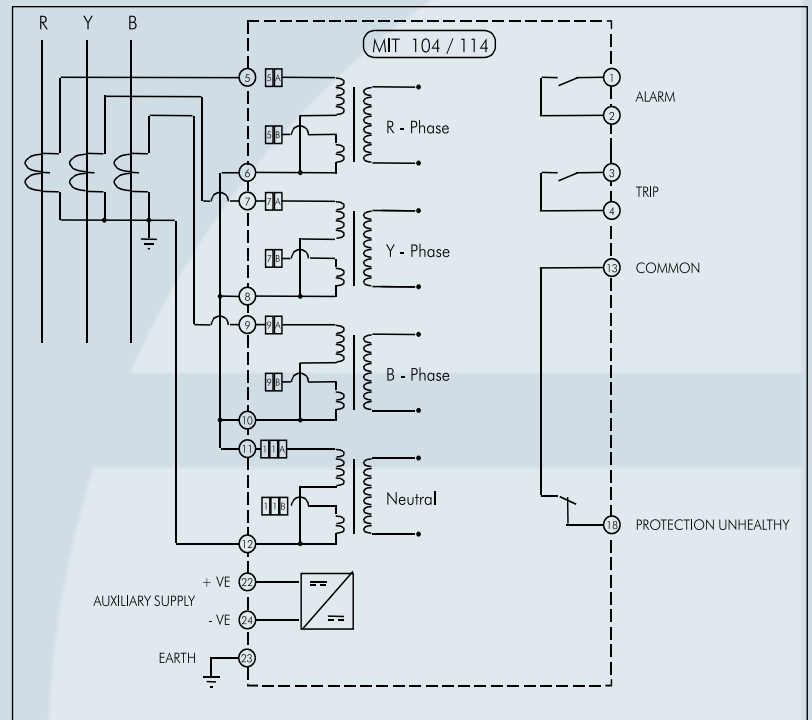
User Interface

- Seven segment LED display
- LED indications
- Sealable front cover to prevent unauthorised access

Other Features

- 3 pole and 4 pole versions
- Both 1A & 5A CT inputs in one relay
- Wide range for current and time settings
- Both DC & AC auxiliary supply available
- Drawout modular case
- Compact design
- Non-volatile memory for trip indication

Wiring Diagram



Typical Wiring Diagram

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Technical Information

CT Input Rating	1A/5A
Frequency	50Hz
Auxiliary supply	48/110/220V DC/110V AC or 24/30/48/110V DC

Settings

Phase fault	5% to 250% insteps of 1%
Earth fault	5% to 250% insteps of 1%
Highset for Phase fault	50% to 3000% insteps of 50%, OFF
Highset for Earth fault	50% to 3000% insteps of 50%, OFF
Time multiplier for Phase fault	0.025 to 1.0 insteps of 0.001
Time multiplier for Earth fault	0.025 to 1.0 insteps of 0.001
Reset delay	0 to 60sec insteps of 1sec

Inverse Characteristics

Operating time can be calculated as follows:

$$t = \frac{k}{\left[\frac{I}{I_s}\right]^\alpha - 1} \times T_m$$

where I=fault current, I_s=current setting, T_m=time multiplier,

SI3 - k = 0.14, α = 0.02

SI1 - k = 0.0613 α = 0.02

VI - k = 13.5, α = 1.0

EI - k = 80.0, α = 2.0

LTI - k = 120.0, α = 1.0

Definite Time relay

For DTL t=0 to 20sec insteps of 0.01sec

Output Contacts

- The basic relay has output relay with 2 N/O and 1 N/C contacts as standard

Trip	1 N/O
Alarm	1 N/O
Protection unhealthy	1 N/C

- Additional 5 output relays can be given as follows:

Starter	1 C/O
IDMTL Phase fault	1 N/O
IDMTL Earth fault	1 N/O
Highset Phase fault	1 N/O
Highset Earth fault	1 N/O

Contact Rating

Carry continuously
Make & Carry
Break

5A AC rms or DC
20A for 0.2sec
Resistive 75W DC
Inductive 50W DC
@L/R≤40msec
with a maximum of 300V DC

Indication

Green LED
Yellow LED
Red LED (5mm)
Red LED (3mm)
Seven segment
Display window }

Protection Healthy
Starter
Trip
Submenu
Setting display and
faulty phase/starter indication

Burden

AC Current Input (Phase/Earth)

5 A Rating	≤ 0.4 VA
1 A Rating	≤ 0.05 VA
Auxiliary input	
Quiescent (typical)	5 W (DC) 12VA (AC)

Environmental

Temperature	IEC 60068-2-1/2
Operating range	-10° C to +55°C
Storage range	-25° C to +70°C

Humidity

4 days at 40°C and 93%RH

Transient Overvoltage IEC 60255-5

Insulation

IEC 60255-5

High Frequency

IEC 60255-22-1 class III

Disturbance

IEC 60255-22-2 class III

Electrostatic

IEC 60255-22-3 class III

Discharge

IEC 60255-22-4 class IV

Radio Frequency

IEC 60255-21-1 class I

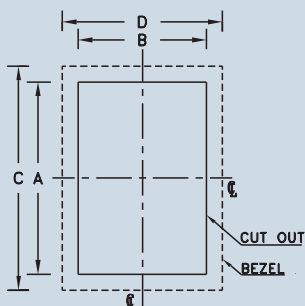
Vibration (Sinusoidal)

IEC 60255-21-2 class I

Shock & bump

**EASUN REYROLLE**

Cutout Details



PART	CASE SIZE	CUT OUT		BEZEL	
		A	B	C	D
01	2/3V	149.5	148	170	170

Note:

1. All dimensions are in mm
2. All dimensions are measured equidistant from centre line
3. Maximum depth of equipment inside panel : 200mm

Ordering Information

- Protection requirement i.e. 3P or 4P, with or without Highset
- Auxiliary supply range
- Outputs (Optional extra)

Qualification

ISO 9001 - 2000

The policy of Easun Reyrolle is one of continuous improvement and development. The company therefore reserves the right to supply equipment, which may differ slightly from that described and illustrated in this publication.

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